371.6
F19s

Fall.

School grounds, school architecture and out-
outbuildings

Gaylord Bros.
Makers
Syracuse, N. Y.
PAT. JAN. 21, 1908

A Study of the Grounds and Architecture of the

E. L. NORTON.

Schools of Michigan

By the State Superintendent of Public Instruction

SCHOOL GROUNDS

SCHOOLHOUSE ARCHITECTURE

AND

OUTBUILDINGS

PREPARED FOR THE SIXTY-SIXTH ANNUAL REPORT OF THE DEPARTMENT OF PUBLIC INSTRUCTION

DELOS FALL

Superintendent of Public Instruction

"To be brought into tune with good things is the first step toward being good."

"Given a good teacher, a schoolroom constructed, heated and ventilated according to approved methods, and a healthy public sentiment in a rural school district, and the best city school cannot furnish more wholesome and stimulating conditions for the education of the children of our cities, than our rural schools favored by such conditions, do for the children in country districts."

"The schoolroom could and should be made to serve the same purpose in training the mind to a perception of beauty in domestic arrangements that the personal example of the teacher should exercise in the matter of dress."

"Children as well as older people are affected by their environments, and nowhere is this more clearly shown than in the schoolroom. The silent beauty radiating from the harmoniously tinted walls and ceilings; from beautiful decorations consisting of pictures, casts and plants, quickens and purifies the taste. Such beauty of surroundings has a subtle, silent, ethical influence which is not so much seen as felt."

371.6
F18s

SCHOOL YARDS AND SCHOOLHOUSE ARCHITECTURE.

In the report of this Department for 1894, a somewhat detailed statement was made in regard to school architecture. The many inquiries received during the past year indicate that there is a growing interest in these matters, and to assist in improving our schools along sanitary and architectural lines the following suggestions, plans and sketches have been prepared. In doing this we have kept in mind the fact that expensive buildings and decorations are not needed; that we need serviceable buildings, and the least expense commensurate with the healthful development of our children.

It is impossible to furnish detailed plans to cover every possible case, and we shall confine the work almost entirely to rural school conditions.

SCHOOL SITE.

In selecting a site, the size, soil, drainage, elevation and convenience of approach should be considered. No school site ought to contain less than one acre, and two acres is none too large. The soil should be dry and porous and if not naturally, should be artificially drained. The frontage should be about two-thirds of the depth of the lot. The site selected should be the brightest, most healthful, and most beautiful spot to be found near the center of the district. Natural beauty of surrounding should be secured if possible. A community cannot afford to sacrifice quality of soil, sightliness, elevation, and drainage to the single item of central location. The site should be elevated but not on a bleak hill, the lot highest where the school building is located and gently sloping away from it. The house should be back of the center of the lot with the playground in the front, or it may be in front of the center with the playground in the rear. The best place for the wood house is in the rear of the schoolhouse, or at the side as circumstances permit. No trees should be within fifty feet of the school building. The area at the sides of the building should be reserved for flower gardens, and a row of trees be planted around the lot.

WATER SUPPLY.

Our law now requires that the school board shall provide a water supply. They may rent the use of a well at some adjacent farmhouse, or put down a bored well. No open well should be permitted on the school grounds.

OUTBUILDINGS.

For rural schools the outbuildings should be located in the rear corners of the lot and never side by side. For the average school they should not be more than six feet square and seven and one-half feet high and should be thoroughly sand painted inside and outside, and enclosed by a tight board fence seven feet high. The vault may be of cement or brick and open at the rear for convenience in cleaning. Proper urinals should be provided in the boys' closet. The vault and urinals should be thoroughly cleaned at least twice each year and thoroughly dusted with dry coal ashes and chloride of lime. It is the duty of the director to attend to this matter.

SCHOOL BUILDING.

The foundation walls should be of stone laid in cement with ventilators on each of the four sides when there is no basement; these ventilators may be three inch tile extending through the wall.

The walls should extend three feet above ground. In every case it would be highly advisable to have a basement under the entire building which may be partitioned for a furnace room, a workshop and kitchen. A single manual training outfit, costing from fifteen to twenty-five dollars, ought to be placed in the workshop, where the boys may learn the use of the common tools and often make apparatus for use in the school. A cook stove and a few kitchen utensils will give the teacher and the girls an opportunity for cooking warm dinners and gaining some wholesome lessons in domestic economy. This is practical education and can be secured at very small cost. The remainder of the room may be used for a playroom on stormy days. A table on which lunches may be spread should be built on one side of the playroom. This basement should be eight feet high, floored with cement. It would be an excellent plan to build in the walls of the schoolroom cupboards or cases with glass doors for books, specimens of various kinds, pioneer relics, and apparatus.

The exterior of the building should be simple in construction and without unnecessary ornamentation.

COLOR OF EXTERIOR.

It would not be advisable to have all buildings of the same color. I would suggest the following:

The colonial style—light yellow with white trimmings; gray tints with dark trimmings; light yellow with dark green trimmings; plain white with green blinds.

SIZE OF SCHOOLROOM.

In general the width should be two-thirds or three-fourths of the length. A room 24x32 should be twelve feet high. Generally the height of a schoolroom should be more than eleven feet and less than fifteen feet.

The floor area should be sufficient to give each child not less than twenty-five square feet of surface, and he should have not less than 300 cubic feet of space.

The teacher's desk should be at the side of the room which is not provided with windows.

WINDOWS.

All things considered, it is best to have a schoolhouse face the south or west. In this way the windows may be on the east and north, or west and north sides, thus avoiding the glare of sunlight. The windows should be provided with opaque shades of a color to harmonize with the finish of the room. The windows should be grouped close together to avoid cross lights, and so far as possible be placed in the wall at the left of the pupils when seated. The rear window on this side should be near the rear wall and the front window opposite the front desks. The windows should extend to the ceiling and down to a level with the pupils' eyes when seated. There may be windows in the rear wall or in side wall when necessary.

The area of glass in a schoolroom should be equal to one-fifth of the floor space; i. e., if the room is 24x32 there are 768 square feet in the floor, and there should be 153 square feet of glass in windows. Four windows seven and one-half or eight feet long, and three feet wide should be grouped in the side wall; and three of the same size in the rear, or four on the opposite side when it is deemed best to have the windows in the side walls. No windows should be placed where children must face them when seated at their desks.

BLACKBOARDS.

It is preferable to have all blackboards of slate, at least forty-two inches wide and placed on all the walls where there are no windows. In rural schoolhouses the lower edge of the board should be within twenty-eight inches of the floor. In grammar and high schoolrooms it should be about three feet from the floor.

FLOORS.

These should be of hardwood, maple, narrow-sawed, preferred. All floors should be double, and deadened by placing building paper or other material between.

DESKS.

Single adjustable desks should be furnished in all schoolrooms. The seat and back of desk should fit the child's body and permit the feet to touch squarely on the floor. Seats of the same size should be placed in the same row with aisles from thirty inches to three feet in width.

At least three sizes of desks are needed in every rural schoolroom. No. 2 for the older pupils, No. 3 for intermediate and No. 5 for the young children. The desks for small children should be so placed that the edge of the desk in front of the child is nine inches from the back of his seat. For intermediate grades this space should be ten to eleven

inches, and for higher grades twelve to thirteen inches. In the average schoolroom light-colored desks are preferable, as they harmonize easier with other furnishings. The cherry, or dark-colored desks should be used only in rooms that are very light.

VENTILATION.

In single room school buildings, a simple and effective mode of supplying fresh air is to have an air-tight galvanized iron, or other metallic conduit, extending from the outer air, where its openings are covered with strong wire netting, through foundation walls under the floor to beneath the stove, then up through the floor, closely connecting with the galvanized iron, or zinc jacket, surrounding the stove except for the fuel and draft entrances.

This fresh air conduit should be large enough to supply 2,000 cubic feet of air per hour to each occupant of the room, when the natural movement of the air is less rapid, that is when the temperature of the outdoor air is only about ten degrees lower than that of the indoor air. The sizes of the flues for the supply of fresh air and the removal of vitiated air should be about the same, and should be determined by the number of persons who will occupy the room, and not by the cubical contents or floor space of the room. The minimum floor space of 25 sq. ft. should be provided for each occupant. A room 24x32 ft. should accommodate about thirty persons; and according to the standard just given, they would require a total of 62,000 cubic feet of fresh air per hour. These figures are in accordance with the plans of our best architects and health officers, but in a rural schoolroom, where the doors are frequently open and stand open during intermissions, a larger number of pupils can be safely seated in a room of the size indicated. Assuming the height of the ventilating shaft for this room, measured from the floor level of the room to the top of the shaft above roof to be 25 feet, the fresh air and ventilating flues should be about 30 inches in diameter, if circular, or 35 inches square.

The ventilating shaft must be warmed in order to be of much value, and for this reason, it should be built in connection with the chimney. The smoke flue may be made of tile placed inside the ventilating shaft, or it may be built at one side, a thin partition between. The ventilating shaft should open into the room at the floor by a register. If possible the opening from the shaft into the room should be made larger than the inside measurement of the shaft, that is, from the shaft to the interior of the wall, the surface should slant outward, so that a register built in the wall is one-third larger than the area of the shaft, the register being thus wider than the shaft, and should not be over 16 inches in width up and down. No register should be wider than this, because we desire to remove the lowest stratum of air, which is the coldest and most likely to obtain objectionable dust. In many localities, it would be just as cheap and much more effective to have a furnace instead of a stove, and in this case the ventilating shafts may be built the same as indicated above.

INTERIORS.

In single room buildings the halls should be at least eight feet square and hallways in two or three-room buildings should be sufficiently wide to admit two files of marching students. The wardrobes should be large enough to allow a separate hook for the wraps of each child. These rooms should be well ventilated, and warmed in the winter.

The stairs should be from five to seven feet wide, according to the number of children and number of rooms. The risers not less than five nor more than seven inches high, and the treads twelve inches wide. There should be as few turns as possible and the staircase should be so arranged as to permit a teacher to command it from one position.

In many instances we have fine looking school buildings on the outside but when we go within we find improper lighting, no ventilation, poor heating facilities, and no attempt at wall decoration.

The exterior should be as attractive as the means of the community will warrant, but it is much more important that attention be given to proper interior conditions.

All woodwork should be plain so as to afford the least possible opportunity for accumulation of dust. The doors, wainscoting, and other wood work should be of oak, birch or hard pine, finished in the natural color. The wood should be "filled" and varnished, then rubbed to remove the shiny surface.

COLORS FOR INTERIOR.

A pleasing interior depends more upon the coloring than upon any other single feature. The floor should be the darkest surface in the room, except the blackboards; and the wainscoting, if it must be painted, should be several shades lighter than the floor. A good color for the wainscoting is produced by putting a small amount of raw sienna and chrome yellow with white paint, thus giving what painters call "cream white." The mouldings and finishing board of wainscoting should be darker or a light brown.

The wall spaces not occupied by blackboard or wainscoting may be tinted a light cream, very light gray, blue gray, olive green or light buff. In all cases the tints should be of the lightest and most delicate shades. It is a good plan to have a border around the walls near the ceiling. This may simply be a band of darker color than the wall and of a shade that will harmonize, from two inches to six inches wide and from twelve inches to eighteen inches below the ceiling. In place of this band, a moulding may be fastened to the wall from which pictures may be hung. Above this band or moulding the tint should shade from the wall color to that of the ceiling.

All mouldings and borders should be darker than the ground work. If the walls must be papered, the same plan of shading should be observed. The ceiling should be a very delicate cream tint, light buff, or light green. The color of the walls should harmonize with the woodwork, either by analogy or contrast. The window shades should be of the same tint as the walls or slightly darker. The harmony of color should be preserved with reference to the lighting of the room. If the light is strong, darker shades should be used. With a north or east

light "warm" colors such as light cream or light orange will give the impression of warmth to the otherwise cold blue of the air.

This matter of finishing should receive the most careful study by architects and building committees, bearing in mind that trying colors, such as the strong tones of blue, and any hue of violet or red, should always be avoided.

School officers should insist upon having the interior of the schoolrooms properly arranged, tinted and decorated, and these matters should never be entrusted to a novice, nor should prejudice or economy be permitted to work irreparable injury to the eyesight or health of the children.

The following cuts are made from buildings actually constructed and tested. The single room buildings may be erected for from $600 to $1,200; the two-room buildings for $1,600 to $3,500; and the three-room buildings for $2,500 to $4,000. Any school board selecting a plan can have an architect prepare specifications as to material and cost.

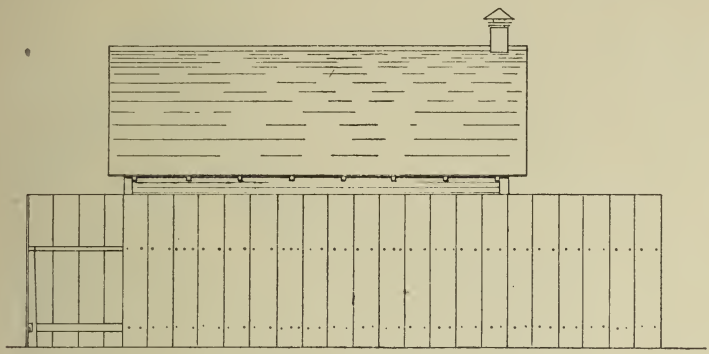
ACKNOWLEDGMENTS.

The figures numbered 1, 2, 3, 4, 5, 6, 16, 17, 18, 19, 20, 21, 22 are taken from a pamphlet published by Mr. Pattengill in 1894.

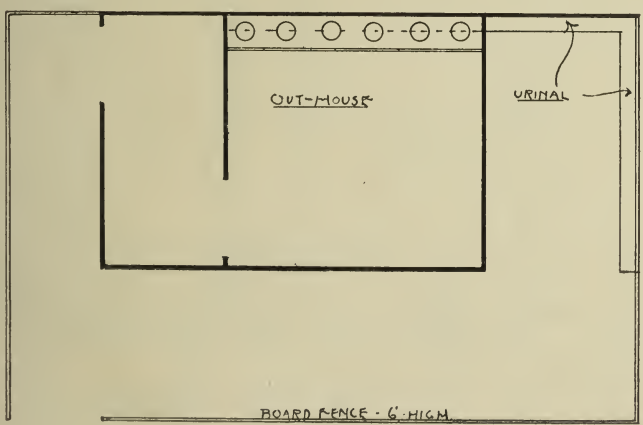
Figures Nos. 7, 8, 9 are from building erected in 1899 in district No. 4, Moscow Township, Hillsdale County. Figures Nos. 10 and 11 are from building erected in 1900 in Osceola County. The plans were furnished by Commissioners Thompson and French.

By the kindness of the members of the school board at Hillsdale, I give plans Nos. 27, 28, 29. These are from the excellent ward building in that city.

I take great pleasure in acknowledging indebtedness to Hon. F. L. Jones, Superintendent of Public Instruction of Indiana, for permission to use designs numbered 12, 13, 14, 15.



ELEVATION ¼" SCALE



PLAN & ELEVATION OF BOYS' OUT-HOUSE

Fig. No. 1.—OUTBUILDINGS.

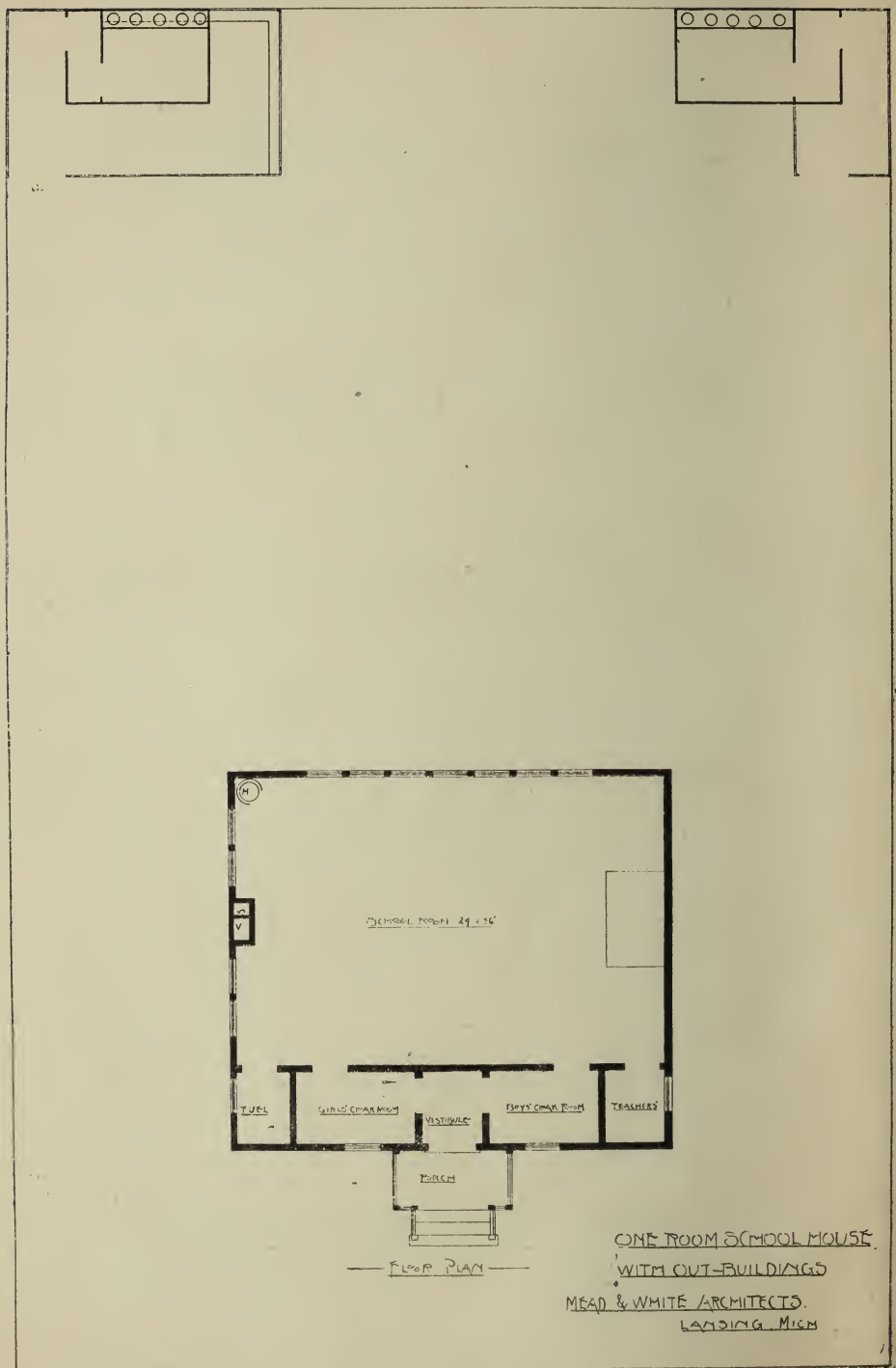


Fig. No. 2.—PLAN OF SCHOOL GROUNDS.

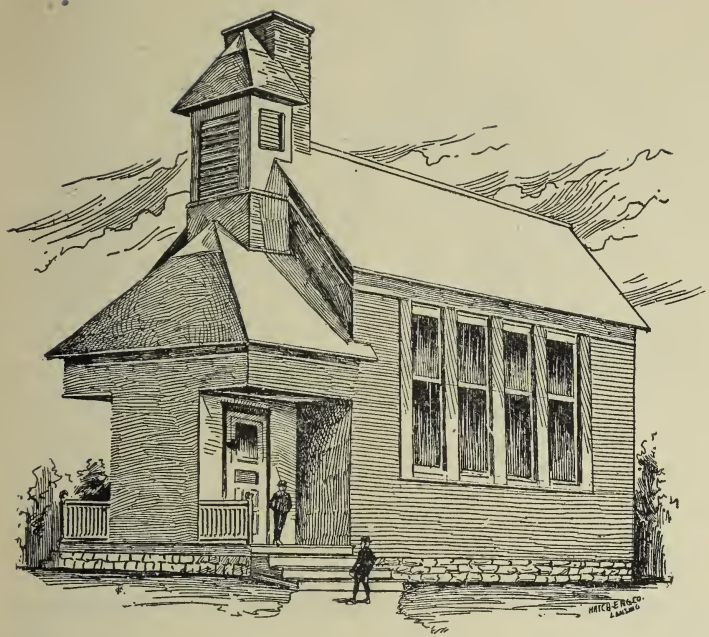


Fig. No. 3.

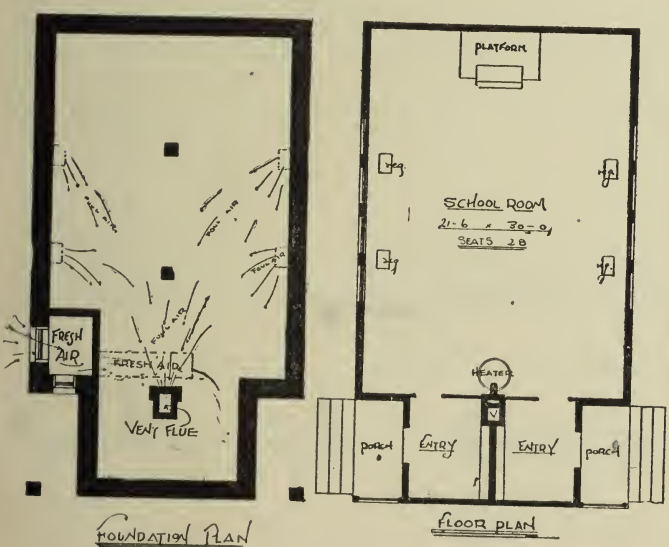


Fig. No. 4.

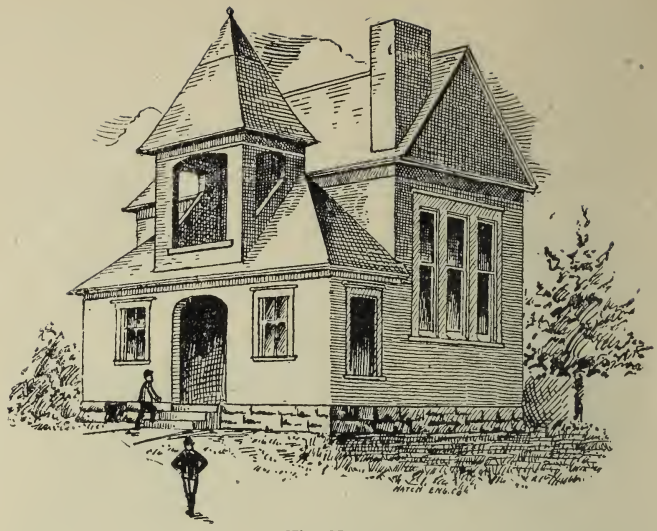
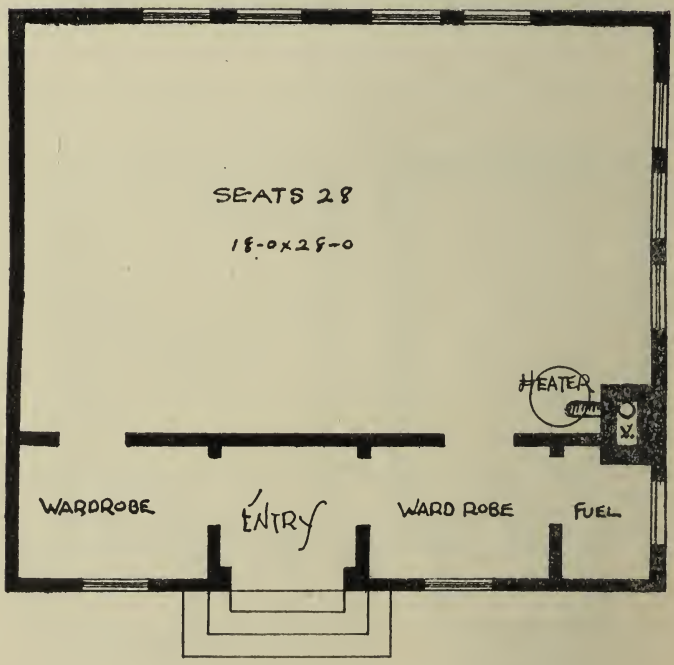
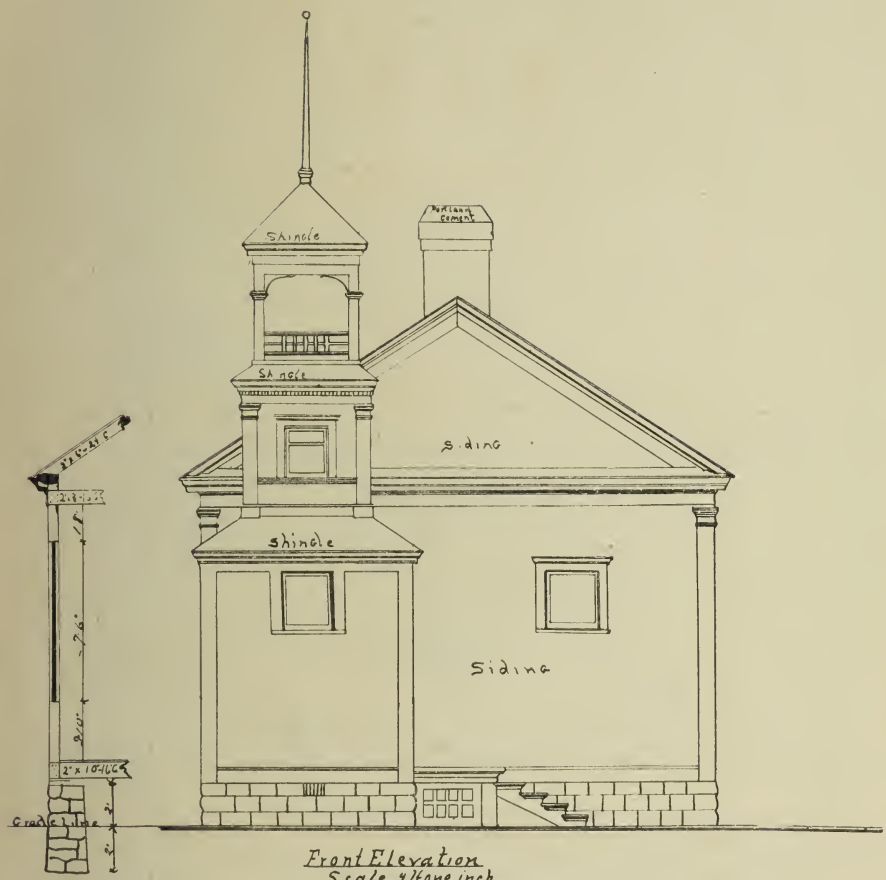


Fig. No. 5.



- FLOOR PLAN -

Fig. No. 6.



Front Elevation
Scale 4/8 one inch

Fig. No. 7.

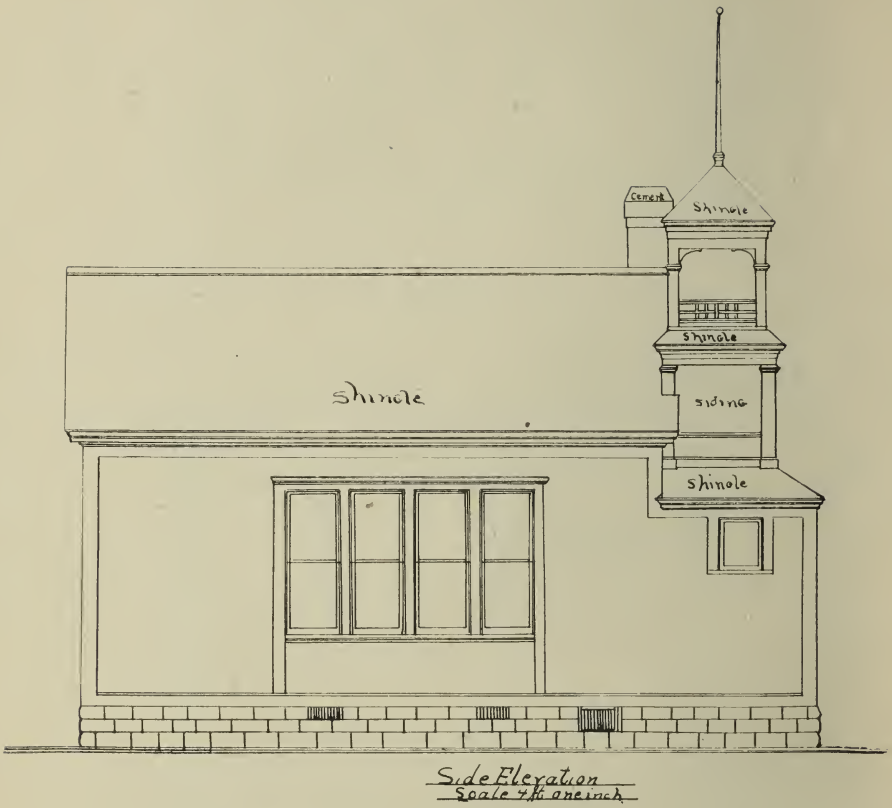


Fig. No. 8.

Cuts 7 and 8 give front and side view of building in district No. 4, Moscow township, Hillsdale Co. Floor plan, see Fig. No. 9.

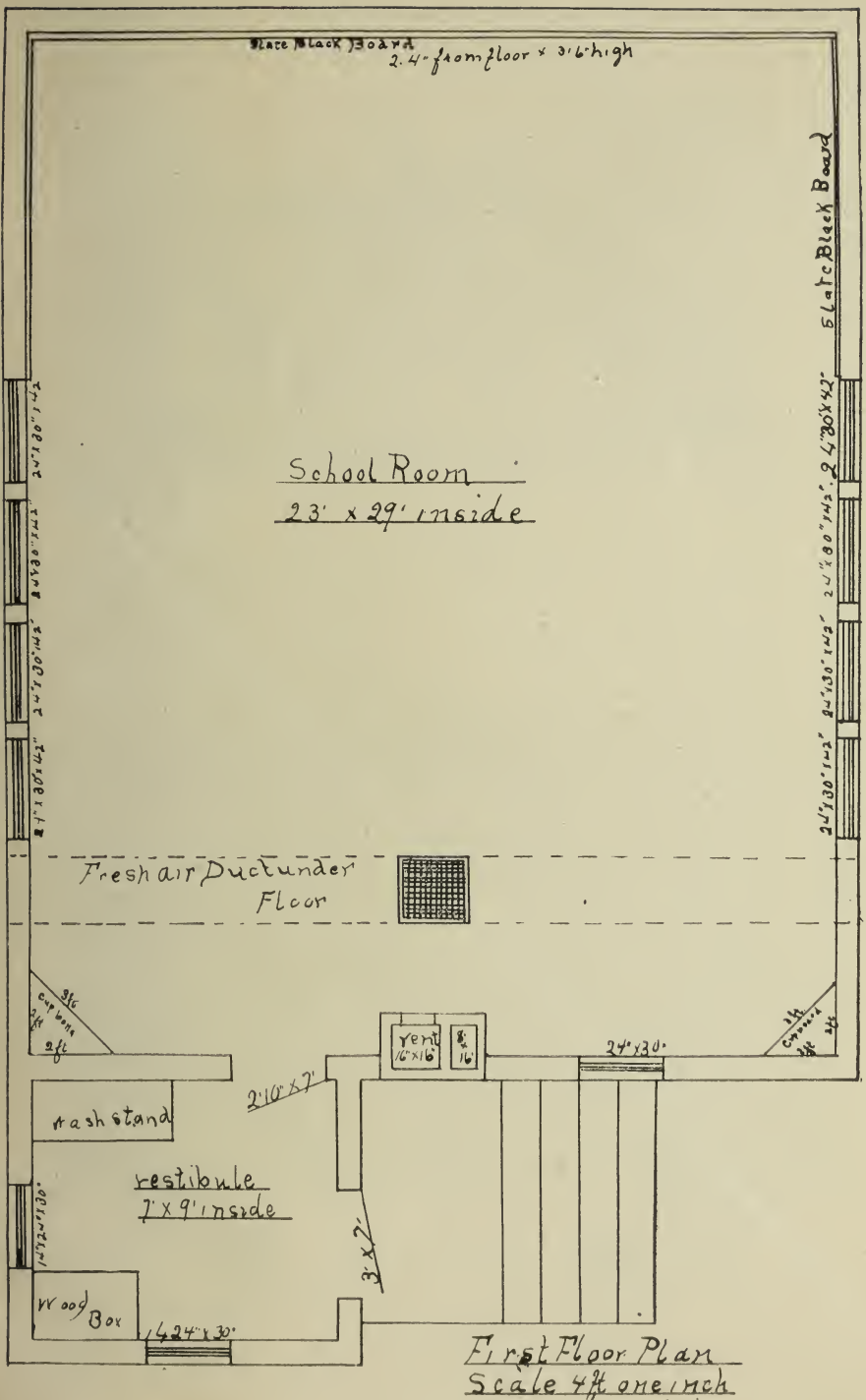

Slate Black Board
2.4'- from floor x 3'6" high
Slate Black Board
School Room
23' x 29' inside
Fresh air Duct under Floor
Vent 16"x16"
24"x30"
Wash stand
Vestibule
7'x9' inside
Wood Box
First Floor Plan
Scale 4ft one inch

Fig. No. 9.

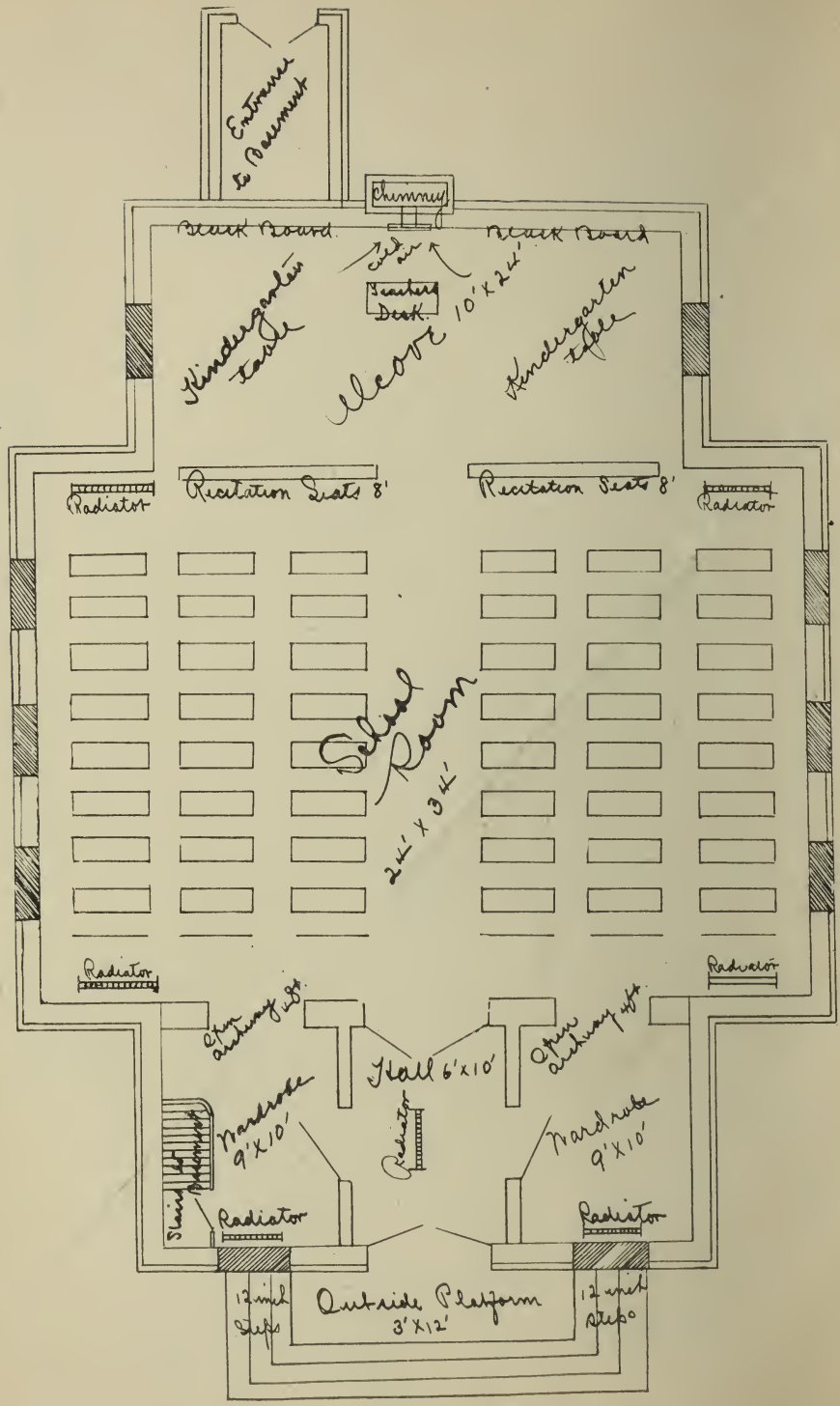

Entrance to Basement
Chimney
Black Board
Black Board
Teacher's Desk
10' x 24'
Alcove
Kindergarten Table
Kindergarten Table
Radiator
Recitation Seats 8'
Recitation Seats 8'
Radiator
School Room
24' x 34'
Radiator
Radiator
Open entryway to
Open entryway to
Hall 6' x 10'
Wardrobe 9' x 10'
Wardrobe 9' x 10'
Register
Steps
Radiator
Radiator
12 inch Steps
Outside Platform 3' x 12'
12 inch Steps

Fig. No. 11.

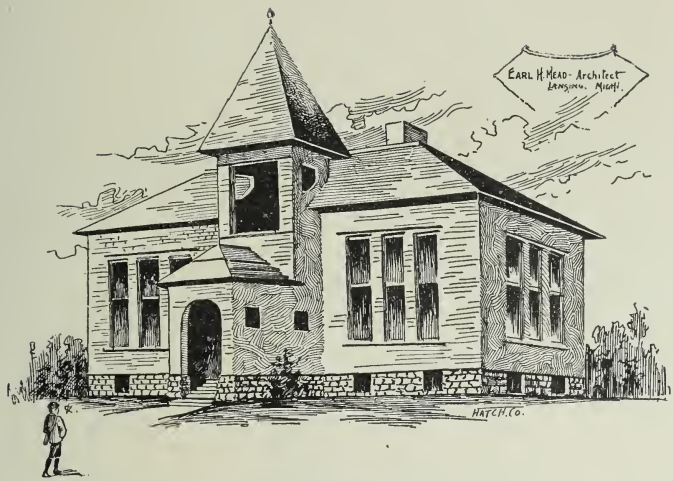


Fig. No. 18.

See floor plan cuts Nos. 19 and 20.

Fig. No. 10.—SIDE VIEW OF BUILDING IN OSCEOLA COUNTY.

Floor plan, see cut No. 11.

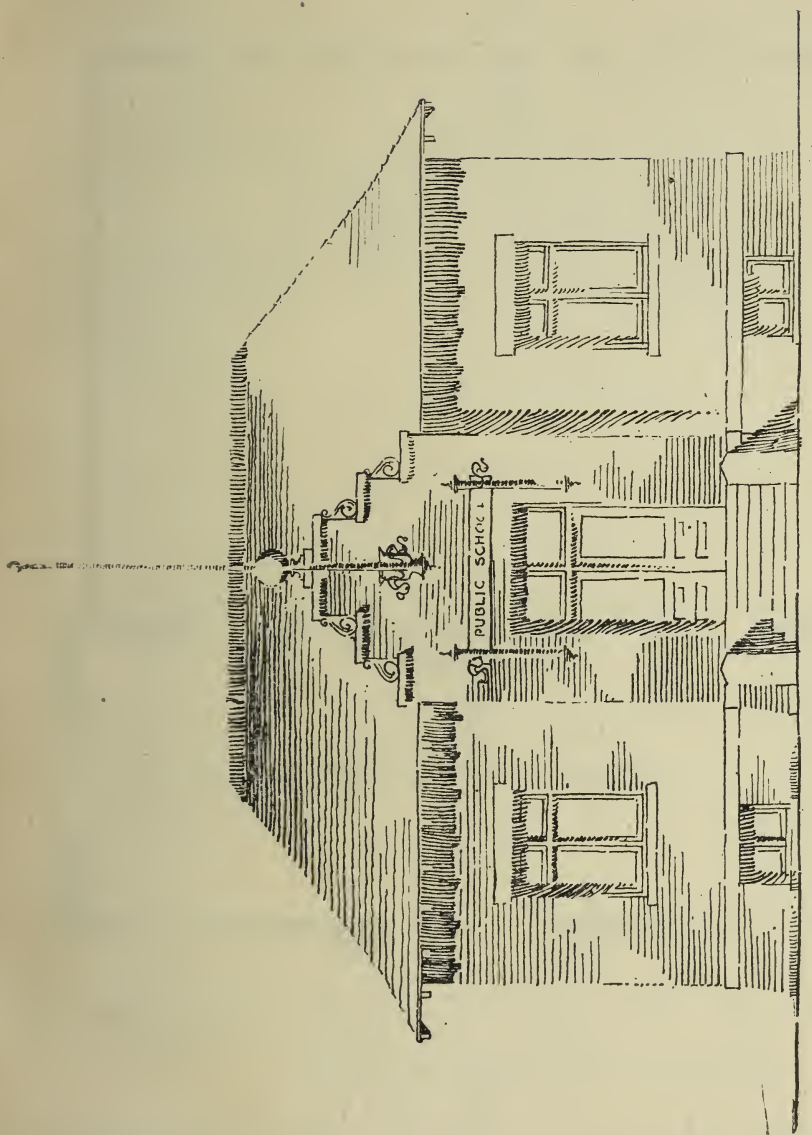


Fig. No. 12.—FROM INDIANA REPORT OF SUPERINTENDENT OF PUBLIC INSTRUCTION

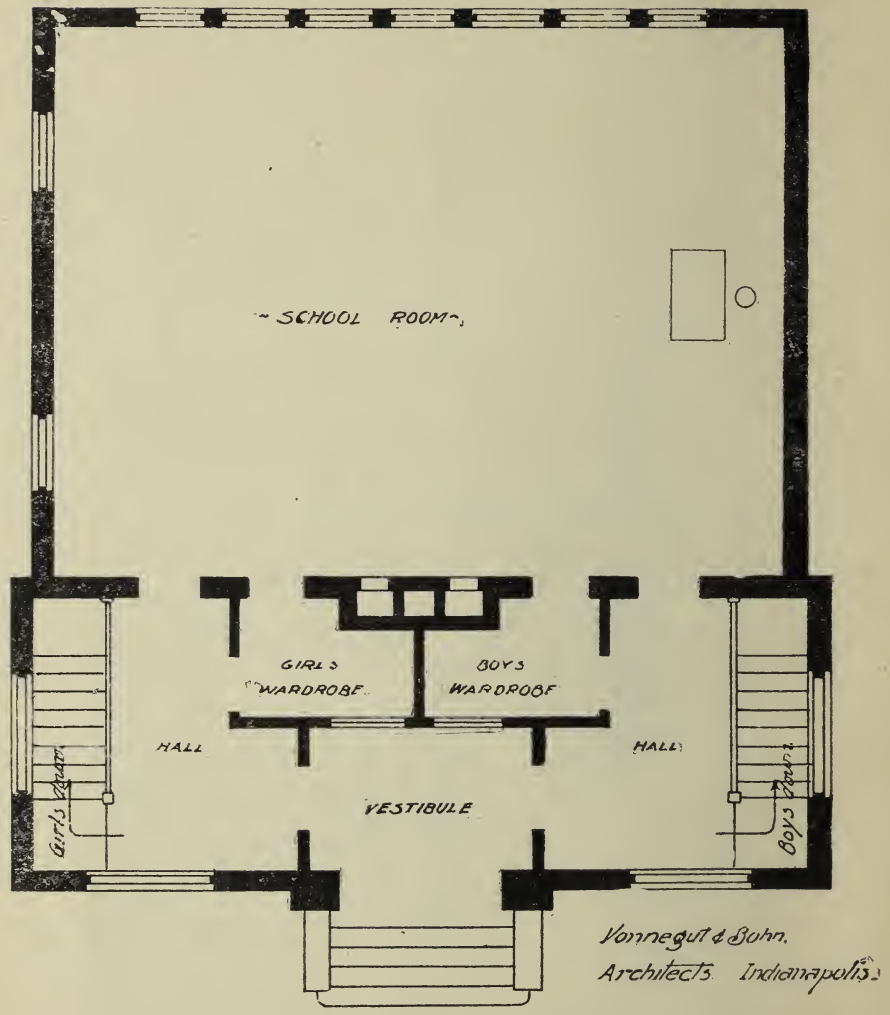


Fig. No. 13.—INDIANA REPORT.

Floor plan of cut No. 12.

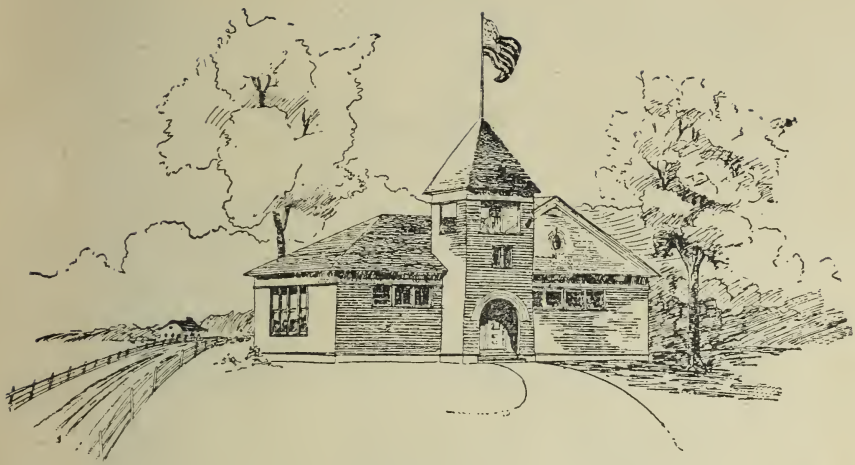


Fig. No. 14.

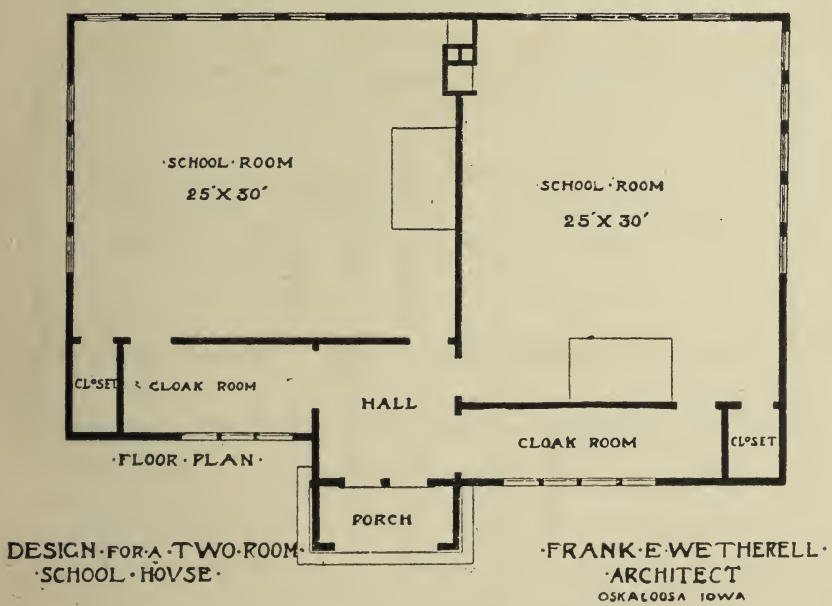


Fig. No. 15.—FROM INDIANA REPORT.

Fig. No. 16.

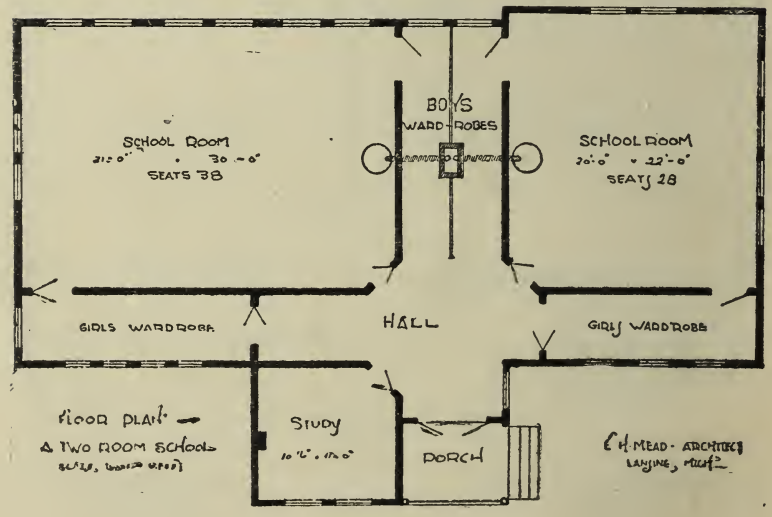


Fig. No. 17.

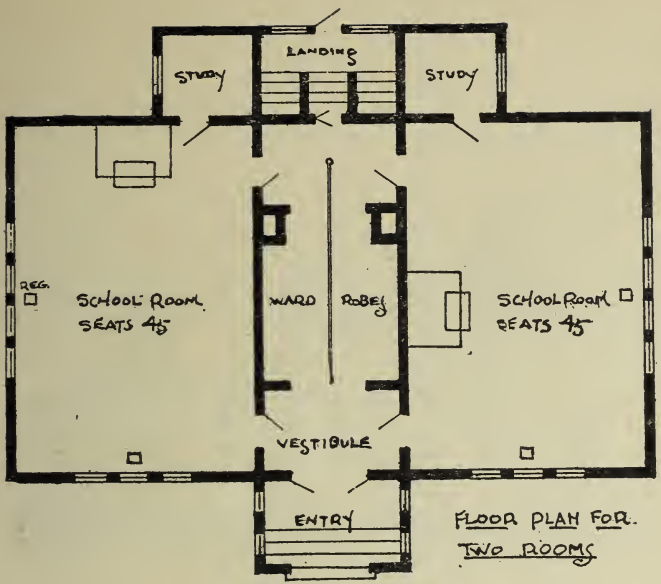


Fig. No. 19.

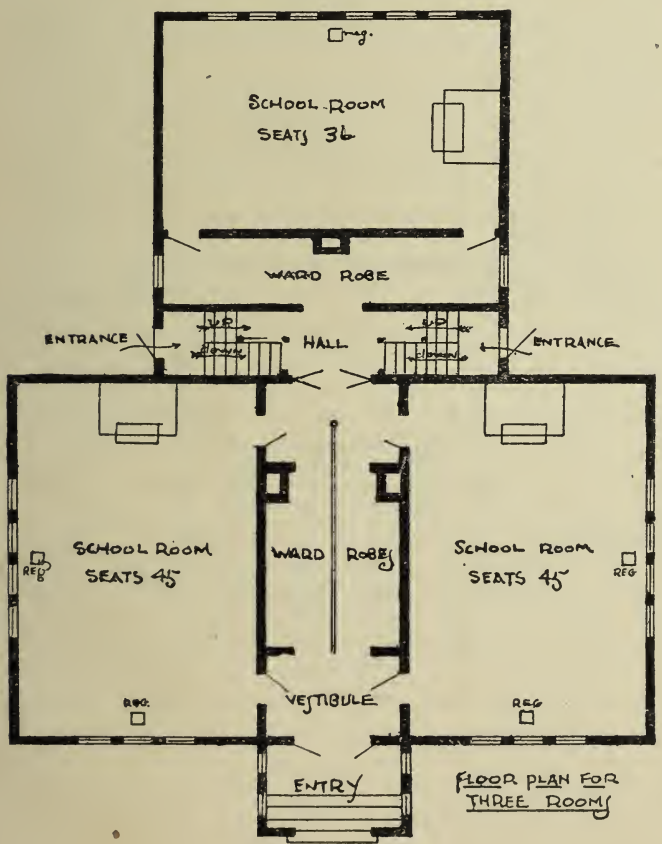


Fig. No. 20.

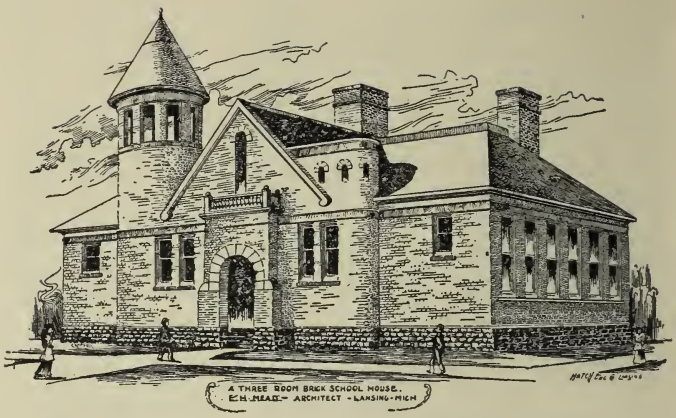
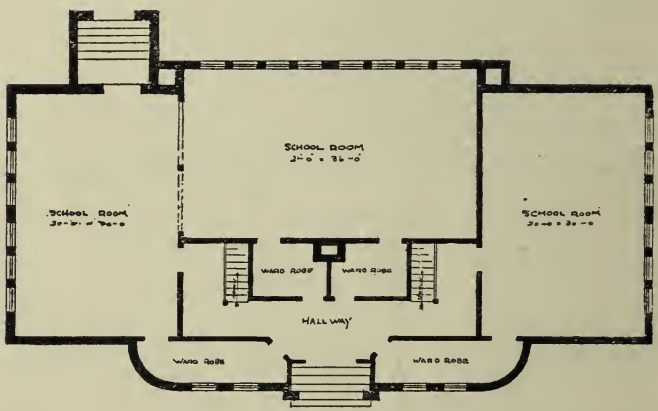


Fig. No. 21.



PLAN FOR A THREE ROOM BRICK SCHOOL HOUSE.

Fig. No. 22.

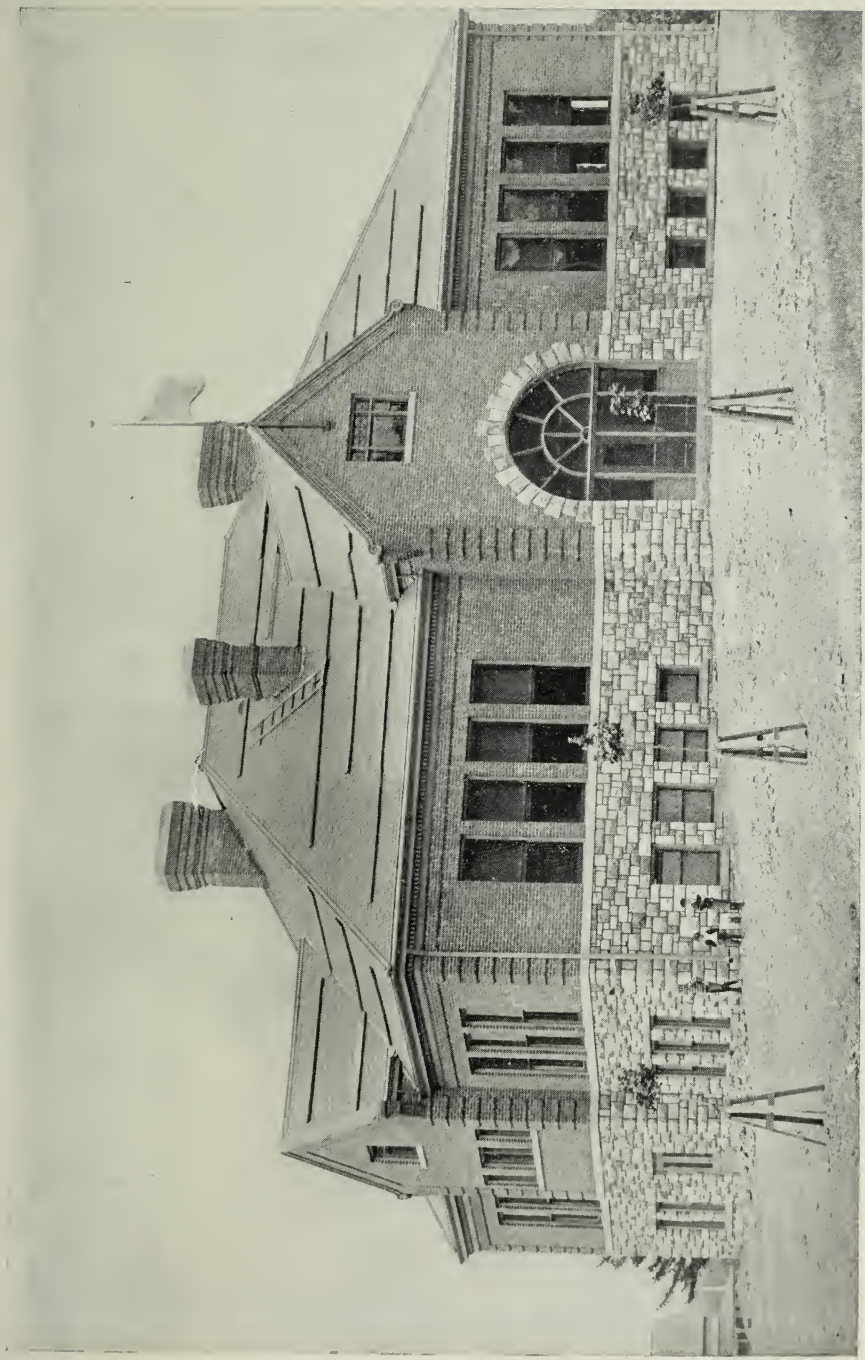


Fig. No. 27.—FRONT VIEW OF SECOND WARD BUILDING, HILLSDALE, MICH.

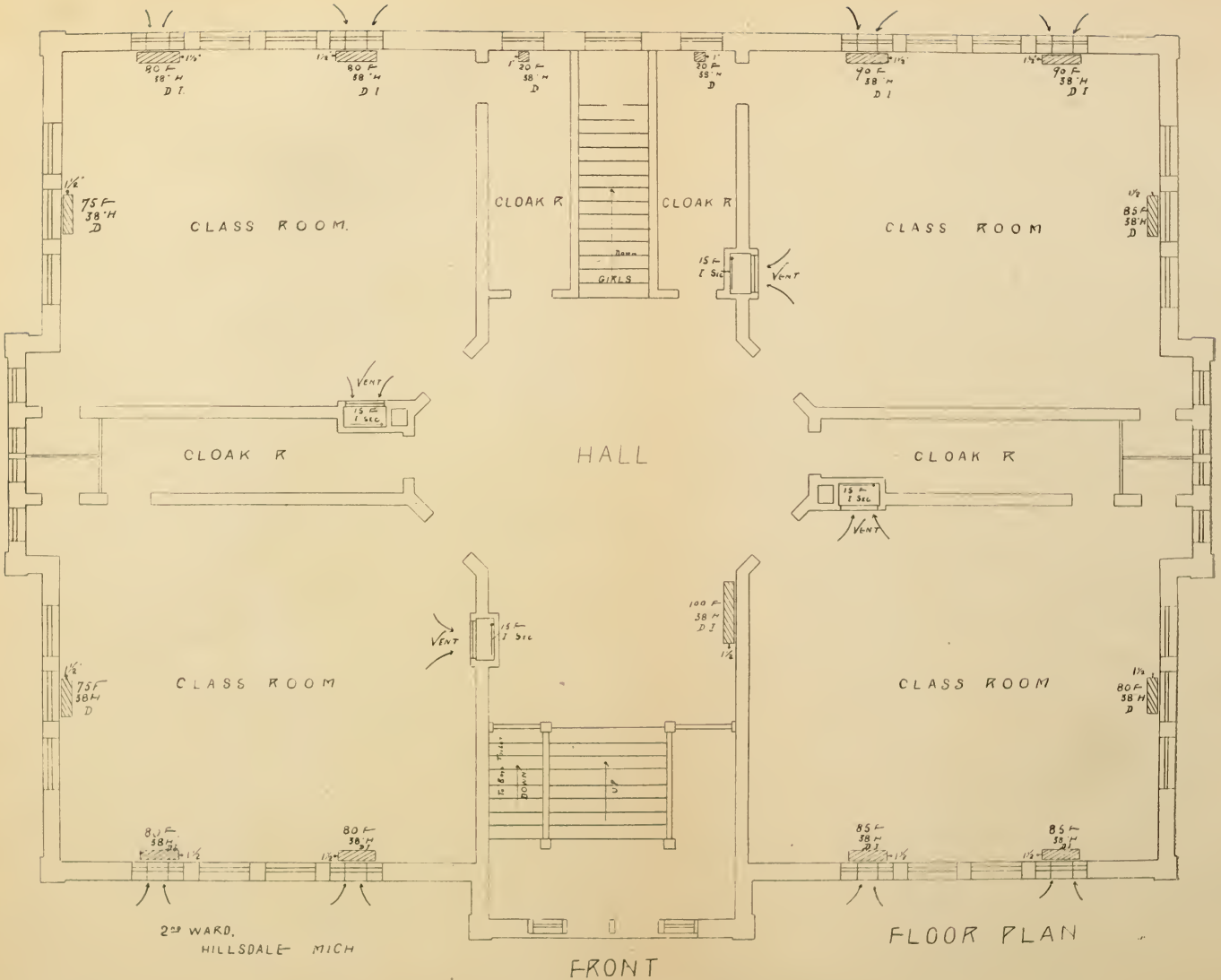


Fig. No. 28.—FLOOR PLAN. CUT 27.

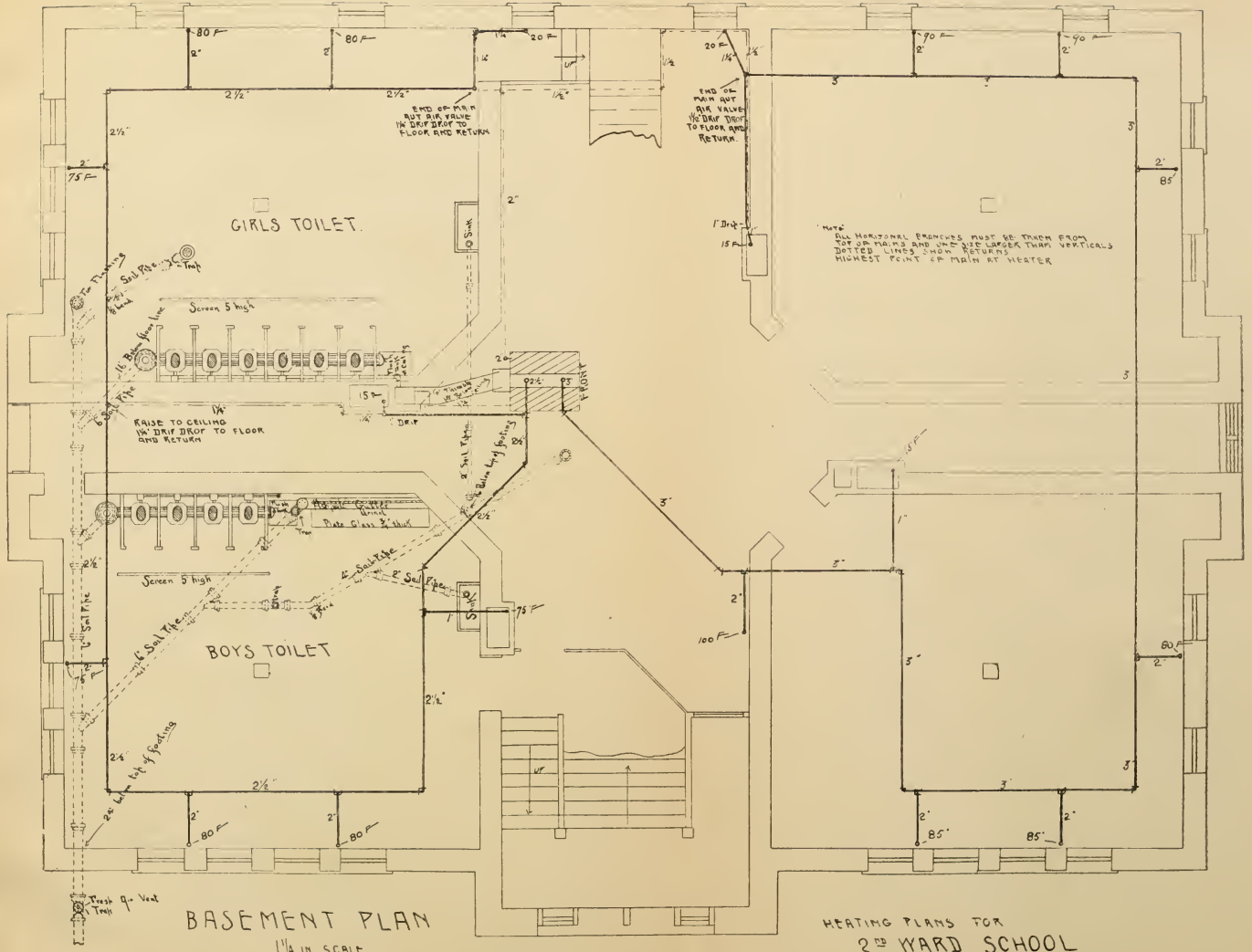

GIRLS TOILET
BOYS TOILET
Screen 5' high
Slate Glass 3/4" thick
Soil Pipe
Vent
To Planning
Raise to ceiling 1/4" drip drop to floor and return
End of main air valve 1/4" drip drop to floor and return
Note: All horizontal branches must be taken from top of mains and line 2" larger than verticals. Dotted lines show returns. Highest point of main at heater
Fresh Air Vent
BASEMENT PLAN
1 1/4 IN SCALE.
HEATING PLANS FOR
2nd WARD SCHOOL
HILLSDALE MICH.

Fig. No. 29.—BASEMENT PLAN, CUT 27.

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